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Success Story

JASSM PROGRAM COMPLETES SUCCESSFUL SERIES OF SYMPATHETIC DETONATION TESTS

The Joint Air-to-Surface Stand-off Missile (JASSM) may become the first munition item to obtain insensitive munition (IM) certification and a 1.2.3 hazard classification. Currently, almost all munition items are hazard classified 1.1. This certification and classification reflect improvements in the munition that greatly reduce both the threat for accidental initiation of the item and the severity in case of an inadvertent initiation. The safety implications and reduced costs associated with storage of such IM-compliant munitions are of significant benefit to both the US Air Force and Navy customers.

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Accomplishment

The JASSM Joint Program Office and Lockheed Martin have something to celebrate. With full support of the Munitions Directorate's Energetic Materials Branch, the JASSM warhead and All-Up-Round passed some of the most difficult tests for obtaining IM certification and a reduced explosive hazard classification (1.2.3).

Background

After a disappointing failure of the first JASSM warhead during sympathetic detonation testing, engineers from Lockheed Martin asked the Energetic Materials Branch to analyze the failure. Drawing on previous experience in the development of IM-compliant Mk-82 bombs filled with the newly developed AFX-645 explosive, the directorate recommended a non-standard pallet stacking arrangement. This new stacking arrangement mitigates the energy transferred during sympathetic detonation from one munition to the next.

Lockheed Martin engineers tested this configuration in a hydrocode study and confirmed that the directorate's suggestions did provide a significant improvement for survival. Lockheed Martin further improved this concept by positioning the JASSM warheads side by side in a nose-to-tail configuration. The engineers placed the warhead casings as close as possible, preventing a sympathetic detonation from occuring. Lockheed Martin engineers performed a new test using this storage configuration and successfully passed the sympathetic detonation criterion.

To date, the directorate and Lockheed Martin have accomplished all required IM classification testing, while hazard classification testing is nearly complete. This is a major milestone since it is the first time a major Air Force weapon system has passed all required IM testing.

The Energetic Materials Branch developed AFX-757, the explosive fill used in JASSM, as a replacement for tritonal in the Miniature Munition Technology program. Lockheed Martin, the JASSM contractor, chose AFX-757 for their warhead because of its increased blast energy and potential insensitivity.

Munitions
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Additional information

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